

CLAIMS

WHAT IS CLAIMED IS:

1. A scroll type fluid machine comprising a fixed scroll (40), an orbiting scroll (50), a
5 rotating shaft (20) which engages the orbiting scroll (50), and a self-rotation preventing
mechanism (39) for preventing the orbiting scroll (50) from rotating,

wherein:

the fixed scroll (40) comprises a first stationary-side member (41) provided with a
first stationary-side wrap (42), and a second stationary-side member (46) provided with a
10 second stationary-side wrap (47),

the orbiting scroll (50) comprises: a first flat-plate part (51) having a back surface
on which is provided an engaging part (64) which engages the rotating shaft (20), and a
front surface which comes into sliding contact with the first stationary-side wrap (42); a
first movable-side wrap (53) which forms a first fluid chamber (71) when engaged with the
15 first stationary-side wrap (42); a second flat-plate part (52) which faces the first flat-plate
part (51) across the first movable-side wrap (53) and which has a rear surface coming into
sliding contact with the first stationary-side wrap (42) and a front surface coming into
sliding contact with the second stationary-side wrap (47); and a second movable-side wrap
(54) which forms a second fluid chamber (72) when engaged with the second stationary-
20 side wrap (47), and

the second stationary-side member (46) is provided with a third flat-plate part (49)
which faces the second flat-plate part (52) across the second movable-side wrap (54) and
which comes into sliding contact with the second movable-side wrap (54).

- 25 2. A scroll type fluid machine comprising a fixed scroll (40), an orbiting scroll (50), a
rotating shaft (20) which engages the orbiting scroll (50), and a self-rotation preventing
mechanism (39) for preventing the orbiting scroll (50) from rotating,

wherein:

the fixed scroll (40) comprises a first stationary-side member (41) provided with a first stationary-side wrap (42), and a second stationary-side member (46) provided with a second stationary-side wrap (47),

- 5 the orbiting scroll (50) comprises: a first flat-plate part (51) having a back surface on which is provided an engaging part (64) which engages the rotating shaft (20), and a front surface which comes into sliding contact with the first stationary-side wrap (42); a first movable-side wrap (53) which forms a first fluid chamber (71) when engaged with the first stationary-side wrap (42); a second flat-plate part (52) which faces the first flat-plate part (51) across the first movable-side wrap (53) and which has a rear surface coming into sliding contact with the first stationary-side wrap (42) and a front surface coming into sliding contact with the second stationary-side wrap (47); a second movable-side wrap (54) which forms a second fluid chamber (72) when engaged with the second stationary-side wrap (47); and a third flat-plate part (49) which faces the second flat-plate part (52) across the second movable-side wrap (54) and which comes into sliding contact with the second stationary-side wrap (47).

3. The scroll type fluid machine of claim 1 or claim 2,

wherein:

- 20 the first movable-side wrap (53) is formed integrally with the first flat-plate part (51), and

the second flat-plate (52) is formed as a different body from the first flat-plate part (51) and the first movable-side wrap (53).

25 4. The scroll type fluid machine of claim 3,

wherein the second movable-side wrap (54) is formed integrally with the second flat-plate part (52).

5. The scroll type fluid machine of claim 1 or claim 2,

wherein the spiral direction of the first stationary- and movable-side wraps (42, 53) differs from the spiral direction of the second stationary- and movable-side wraps (47, 54).

6. The scroll type fluid machine of claim 5,

wherein, when the orbiting scroll (50) makes an orbital motion, fluid compression takes place in the first fluid chamber (71) while fluid expansion takes place in the second fluid chamber (72).

7. The scroll type fluid machine of claim 6,

wherein:

plural introduction openings (66, 68, 69) in communication with the second fluid chamber (72) are formed in different positions of the third flat-plate part (49) relative to the radial direction of the second stationary-side wrap (47) or relative to the radial direction of the second movable-side wrap (54), and

an opening/closing mechanism (85) for opening and closing each introduction opening (66, 68, 69) is provided.

8. The scroll type fluid machine of claim 1 or claim 2,

wherein the spiral direction of the first stationary- and movable-side wraps (42, 53) is the same as the spiral direction of the second stationary- and movable-side wraps (47, 54).

9. The scroll type fluid machine of claim 8,

wherein the ratio of maximum to minimum of the volume of the first fluid

chamber (71) differs from the ratio of maximum to minimum of the volume of the second fluid chamber (72).

10. The scroll type fluid machine of claim 8,

5 wherein the ratio of maximum to minimum of the volume of the first fluid chamber (71) is the same as the ratio of maximum to minimum of the volume of the second fluid chamber (72).

11. The scroll type fluid machine of claim 8,

10 wherein a fluid compressed in either one of the first and second fluid chambers (71, 72) is introduced into the other fluid chamber for further compression.